October 24-Month Study
Date: October 15, 2020

From: Water Resources Group, Salt Lake City
To: All Colorado River Annual Operating Plan (AOP) Recipients

Current Reservoir Status

Reservoir	September Inflow (unregulated) (acre-feet)	Percent of Average (%)	October 14, Midnight Elevation (feet)	October 14, Midnight Reservoir Storage (acre-feet)
Fontenelle	25,300	55	6,492.79	246,000
Flaming Gorge	28,400	52	6,025.47	3,177,600
Blue Mesa	22,600	57	7,466.76	414,200
Navajo	-8,300	-19	6,040.75	1,120,900
Powell	47,000	11	3,594.05	11,191,100

Expected Operations

The operation of Lake Powell and Lake Mead in this October 2020 24-Month Study is pursuant to the December 2007 Record of Decision on Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations of Lake Powell and Lake Mead (Interim Guidelines), and reflects the 2020 Annual Operating Plan (AOP) and draft 2021 AOP. Pursuant to the Interim Guidelines, the August 2020 24-Month Study projections of the January 1, 2021, system storage and reservoir water surface elevations set the operational tier for the coordinated operation of Lake Powell and Lake Mead during 2021.

The August 2020 24-Month Study projected the January 1, 2020, Lake Powell elevation to be below the 2021 Equalization Elevation of 3,659 feet and above elevation 3,575 feet. Consistent with Section 6.B of the Interim Guidelines, Lake Powell will operate in the Upper Elevation Balancing Tier for water year 2021, with an initial water year release volume of 8.23 maf and the potential for an April adjustment to equalization or balancing releases in April 2021. This October 2020 24-Month Study indicates that, consistent with Section 6.B.4 of the Interim Guidelines, an April adjustment to balancing releases is projected to occur and the contents of Lake Powell and Lake Mead will be balanced by the end of the water year, but not more than 9.0 maf and not less than 8.23 maf shall be released from Lake Powell. Based on the most probable inflow forecast, this October 24-Month Study projects a balancing release of 9.0 maf in water year 2021.

Consistent with Section 2.B.5 of the Interim Guidelines, the Intentionally Created Surplus (ICS) Surplus Condition is the criterion governing the operation of Lake Mead for calendar years 2020 and 2021. In addition, Section III.B of Exhibit 1 to the Lower Basin Drought Contingency Plan (DCP) Agreement is also governing the operation of Lake Mead in calendar years 2020 and 2021.

The 2021 operational tier determinations for Lake Powell and Lake Mead will be documented in the 2021 AOP, which is currently in development.

The 2020 AOP is available for download at:
https://www.usbr.gov/lc/region/g4000/aop/AOP20.pdf.
The draft 2021 AOP is available for download at:
https://www.usbr.gov/uc/water/rsvrs/ops/aop/AOP21_draft.pdf.
The Interim Guidelines are available for download at:
https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf.
The Colorado River DCPs are available for download at:
https://www.usbr.gov/lc/region/programs/dcp.html.

Fontenelle Reservoir As of October 1, 2020, the Fontenelle Reservoir pool elevation is 6494.43 feet, which amounts to 75 percent of live storage capacity. Inflows for the month of September totaled 25,000 acre-feet (af) or 55 percent of average.

Releases were lowered on September 21st to 900 cfs to compensate for lower inflows and pool elevation. Due to scheduled maintenance releases have been switched from power generation to bypass until mid-October.

The October final forecast for unregulated inflows into Fontenelle for the next three months projects below average conditions. October, November, and December inflow volumes amount to 33,000 af (68 percent of average), 35,000 af (83 percent of average), and 30,000 af (94 percent of average), respectively.

The final total water supply of the April through July inflow volume into the Fontenelle Reservoir is 677,000 acre-feet (93 percent of average).

The August 27, 2020, Fontenelle Working Group meeting minutes are available online on USBR's website at https://www.usbr.gov/uc/water/crsp/wg/ft/ftcurrnt.html. The next Fontenelle Working Group meeting is scheduled for April 22, 2021. The meeting will be held at 10:00am at the Seedskadee National Wildlife Refuge. Depending on the COVID-19 (Coronavirus) situation we may need to change it to a virtual meeting using WebEX. The Fontenelle Working Group is an open public forum for information exchange between Reclamation and other parties associated with the operation of Fontenelle Reservoir.

Flaming Gorge -- As of October 2, 2020 Flaming Gorge Reservoir pool elevation is 6025.85 feet, which amounts to 85 percent of live storage capacity. Unregulated inflows for the month of September is approximately 28,000 acre-feet (af), which is only 51% of

the average September unregulated inflow volume and corresponds to an 82% exceedance.

The September observed unregulated inflow is a Moderately Dry hydrologic classification. Operations will remain at a Moderately Dry hydrologic condition operation per the Flaming Gorge 2020-2021 Operation Plan.

The summer base flow period ended on September 30, 2020. Autumn average daily releases will be decreased from 1,600 cfs to 900 cfs at 50 cfs/day increments to meet Moderately Dry hydrologic condition lower targets in Reach 2 (1,100 cfs to 1,500 cfs). The daily average release of 900 cfs will be achieved on October 15, 2020.

The October final forecast for unregulated inflows into Flaming Gorge for the next three months projects below average conditions. October, November, and December forecasted unregulated inflow volumes amount to 38,000 af (64 percent of average), 42,000 af (82 percent of average) and 32,000 af (92 percent of average), respectively.

Reclamation is planning to hold the next Flaming Gorge Working Group meeting on March 18, 2021 in Price, Utah or via WebEx. The place and in-person meeting TBD. The Flaming Gorge Working Group is an open public forum for information exchange between Reclamation and the stakeholders of Flaming Gorge Dam. The public is encouraged to attend and comment on the operations and plans presented by Reclamation at these meetings. Meeting notes from past Working Group meetings are posted on the Working Group webpage. For more information on this group and these meetings please contact Dale Hamilton at 801-379-1186.

Aspinall Unit Reservoirs – As of October 13, 2020 releases from Crystal Dam are approximately 1,200 cfs. Gunnison Tunnel diversions for irrigation are approximately 800 cfs through the Gunnison Tunnel. The capacity of the Gunnison Tunnel is approximately 1,150 cfs. Flows in the Black Canyon are about 420 cfs.

Blue Mesa did not fill in 2020. On June 19, 2020, the elevation of Blue Mesa was 7492.87 feet above sea level corresponding to a live storage of 603,855 af (72.8 percent of capacity). This was the peak elevation achieved after the spring runoff during 2020. As of October 13, 2020, the elevation of Blue Mesa was 7467.01 feet corresponding to a live storage of 415,876 af (50.1 percent of capacity).

The unregulated inflow volume in September to Blue Mesa was 22,583 af (59 percent of average). Unregulated Inflow volumes forecasted for Blue Mesa for the next three months (October, November and December) are projected to be: 24,000 af (63 percent of average), 22,000 af (71 percent of average) and 20,000 af (77 percent of average), respectively. The October 24-Month Study is reflective of these new forecasts. The 2020 water year unregulated inflow volume was 607,982 af (64 percent of average).

The Aspinall Unit Working Group is an open public forum for information exchange between Reclamation and the stakeholders of the Aspinall Unit. The public is encouraged to attend and comments on the operations and plans presented by Reclamation at these

meetings. Meeting notes from past working Group meetings are posted on the Working Group webpage. For more information on this group and these meetings please contact Erik Knight in the Grand Junction Area Office at (970) 248-0629.

The next scheduled working group meeting will be in January of 2021 but no date has been set at this time. More details will be posted as they become available.

Navajo Reservoir – On October 13th, the daily average release rate from Navajo Dam was approximately 700 cfs while reservoir inflow was averaging approximately 117 cfs. The water surface elevation was 6040.9 feet above sea level. At this elevation the live storage is 1.12 maf (66 percent of live storage capacity) and the active storage is 0.461 maf (44 percent of active storage capacity). NIIP has shut down for the season. The San Juan-Chama project is not currently diverting from the basin above the reservoir. The river flow measured at the Animas River at Farmington USGS gage was at 32 cfs. River flow at the San Juan River at Four Corners USGS gage was 565 cfs.
Releases from Navajo Dam are made for authorized purposes of the Navajo Unit and are pursuant to the Record of Decision for the Navajo Reservoir Operations.
Navajo was at 6043.0 ft of pool elevation and 1,149,180 acre-ft of storage by the end of September, which was 86% of average for the end of the month. The release averaged 780 cfs and totaled 46,435 af, which was 96% of average for the month. Preliminary modified unregulated inflow (MUI) into Navajo was -8,312 af. (The MUI is a calculated number, adjusted for San Juan Chama diversions and change in storage at Vallecito reservoir. The MUI can be negative in very hot dry months when the change in storage at Vallecito is much greater than the observed inflow into Navajo. The observed inflow into Navajo for the month of September was 16,355 af.) Calculated evaporation for the month was 2,475 af. Navajo had a net storage loss of 53,176 af in September.

The most probable inflow forecast for October, November and December, is 12,000 af (25% of average), 18,000 af (54% of average), and 17,000 af (68% of average), respectively.

Releases for the fall and winter will be made to target the San Juan River Recovery Implementation Program's recommended downstream baseflow range of 500 cfs to 800 cfs through the critical habitat reach of the San Juan River (Farmington, NM to Lake Powell). Current modeling shows the release will most likely vary between 500 and 900 cfs to accomplish this for the remainder of summer.
Reclamation conducts Public Operations Meetings three times per year to gather input for determining upcoming operations for Navajo Reservoir. Input from individuals, organizations, and agencies along with other factors such as weather, water rights, endangered species requirements, flood control, hydro power, recreation, fish and wildlife management, and reservoir levels, will be considered in the development of these reservoir operation plans. In addition, the meetings are used to coordinate activities and exchange information among agencies, water users, and other interested parties concerning the San Juan River and Navajo Reservoir. The next meeting will be conducted either (in-person or virtually, depending on the local and governmental guidance at the time) in late January of 2021.

Glen Canyon Dam / Lake Powell

Current Status

The unregulated inflow volume to Lake Powell during September was 47 thousand acre-feet (kaf) (11 percent of average). The release volume from Glen Canyon Dam in September was 602 kaf. The end of September elevation and storage of Lake Powell were 3595.98 ft (104 feet from full pool) and 11.37 maf (46 percent of full capacity), respectively.

Current Operations

The operating tier for water year 2021 (September 2020 through October 2021) was established in August 2020 as the Upper Elevation Balancing Tier, consistent with Section 6.B of the Interim Guidelines. Consistent with Section 6.B of the Interim Guidelines, Lake Powell's operations in water year 2021 will be governed by the Upper Elevation Balancing Tier. With an 8.23 million acre-foot (maf) release from Lake Powell in water year 2021, the October 2020 24-Month Study projects the end of water year elevation at Lake Powell to be above 3,575 feet, and the end of water year elevation at Lake Mead to be below 1,075 feet. Therefore, in accordance with Section 6.B.4 of the Interim Guidelines, an April adjustment to balancing releases is projected to occur and the contents of Lake Powell and Lake Mead will be balanced by the end of the water year, but not more than 9.0 maf and not less than 8.23 maf shall be released from Lake Powell. Based on the most probable inflow forecast, this October 24-Month Study projects a balancing release of 9.0 maf in water year 2021.

In October, the release volume will be approximately 640 kaf, with fluctuations anticipated between about 6,988 cfs in the nighttime to about 12,758 cfs in the daytime, and consistent with the Glen Canyon Dam, Record of Decision (dated December 2016). The anticipated release volume for November is 640 kaf with daily fluctuations between approximately 7,021 cfs and 12,781 cfs. The expected release for November is 640 kaf.

In addition to daily scheduled fluctuations for power generation, the instantaneous releases from Glen Canyon Dam may also fluctuate to provide 40 megawatts (mw) of system regulation. These instantaneous release adjustments stabilize the electrical generation and transmission system and translate to a range of about 1,100 cfs above or below the hourly scheduled release rate. Under system normal conditions, fluctuations for regulation are typically short lived and generally balance out over the hour with minimal or no noticeable impacts on downstream river flow conditions.

Releases from Glen Canyon Dam can also fluctuate beyond scheduled releases when called upon to respond to unscheduled power outages or power system emergencies. Depending on the severity of the system emergency, the response from Glen Canyon Dam can be significant, within the full range of the operating capacity of the power plant for as long as is necessary to maintain balance in the transmission system. Glen Canyon Dam currently maintains 30 mw (approximately 800 cfs) of generation capacity in reserve in order to respond to a system emergency even when generation rates are already

high. System emergencies occur fairly infrequently and typically require small responses from Glen Canyon Dam. However, these responses can have a noticeable impact on the river downstream of Glen Canyon Dam.

Inflow Forecasts and Model Projections

The forecast for water year 2020 unregulated inflow to Lake Powell, issued on September 1, 2021, by the Colorado Basin River Forecast Center, projects that the most probable (median) unregulated inflow volume this year will be 7.9 maf (73 percent of average).

There is significant uncertainty regarding next season's snowpack development and resulting runoff into Lake Powell. Reclamation updates the minimum and maximum probable forecasts four times a year: January, April, August and October. The October forecast for water year 2021 ranges from a minimum probable of 5.17 maf (48 percent of average) to a maximum probable of 16 maf (148 percent of average) with a most probable water year unregulated inflow forecast of 7.9 maf (73 percent of average). There is a 10 percent chance that inflows could be higher than the current maximum probable forecast and a 10 percent chance that inflows could be lower than the minimum probable forecast.

Based on the current forecast of 7.9 maf unregulated inflow, the October 24-Month Study projects Lake Powell elevation will end water year 2021 near 3,576.06 feet with approximately 9.6 maf in storage (39 percent of capacity). Note that projections of elevation and storage for water year 2021 have significant uncertainty at this point in the season. Projections of end of water year 2021 elevation and storage using the minimum and maximum probable inflow forecast from October 2020 are 3,563.36 feet (8.58 maf, 35 percent of capacity) and 3,649.33 feet (17 maf, 70 percent of capacity), respectively. Under these scenarios, there is a 10 percent chance that inflows will be higher, resulting in higher elevation and storage, and 10 percent chance that inflows will be lower, resulting in lower elevation and storage. The annual release volume from Lake Powell during water year 2021 is projected to be 9.0 maf under the October most probable scenario, and 8.23 maf under the October minimum and maximum probable inflow scenarios.

Upper Colorado River Basin Hydrology

Upper Colorado River Basin regularly experiences significant year to year hydrologic variability. During the 21-year period 2000 to 2020, however, the unregulated inflow to Lake Powell, which is a good measure of hydrologic conditions in the Colorado River Basin, was above average in only 4 out of the past 19 years. The period 2000-2020 is the lowest 21-year period since the closure of Glen Canyon Dam in 1963, with an average unregulated inflow of 8.62 maf, or 80 percent of the 30-year average (1981-2010). (For comparison, the 1981-2010 total water year average is 10.83 maf.) The unregulated inflow during the 2000-2020 period has ranged from a low of 2.64 maf (24 percent of average) in water year 2002 to a high of 15.97 maf (147 percent of average) in water year 2011. In water year 2018 unregulated inflow volume to Lake Powell was 4.6 maf (43 percent of average), the third driest year on record above 2002 and 1977. Under the

current most probable forecast, the total water year 2021 unregulated inflow to Lake Powell is projected to be 7.9 maf (73 percent of average).

At the beginning of water year 2021, total system storage in the Colorado River Basin was 28.88 maf (48 percent of 59.6 maf total system capacity). This is a decrease of 2.77 maf over the total storage at the beginning of water year 2020 when total system storage was 31.64 maf (53 percent of capacity). Since the beginning of water year 2000, total Colorado Basin storage has experienced year to year increases and decreases in response to wet and dry hydrology, ranging from a high of 94 percent of capacity at the beginning of 2000 to the now current level of 48 percent of capacity at the beginning of water year 2021. Based on current inflow forecasts, the current projected end of water year total Colorado Basin reservoir storage for water year 2021 is approximately 27.27 maf (46 percent of total system capacity). The actual end of water year 2021 system storage may vary from this projection, primarily due to uncertainty regarding this season's runoff and reservoir inflow.

TO ALL ANNUAL OPERATING PLAN RECIPIENTS

MAILED FROM UPPER COLORADO REGION
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RUNOFF AND INFLOW PROJECTIONS INTO UPPER BASIN RESERVOIRS ARE PROVIDED BY
THE COLORADO RIVER FORECASTING SERVICE THROUGH THE NATIONAL WEATHER SERVICES'S
COLORADO BASIN RIVER FORECAST CENTER AND ARE AS FOLLOWS

:	Obs			sep	Forecast		
:	jun	jul	aug	sep	%Avg	oct	nov	dec
GLDA3:Lake Powell	1453	290	-19.85	46	11%:	250/	310/	270/
GBRW4:Fontenelle	288	145	41	25	55%:	33/	35/	30/
GRNU1:Flaming Gorge	343	158	35	28	51%:	38/	42/	32/
BMDC2:Blue Mesa	139	46	26	22	58%:	24/	22/	20/
MPSC2:Morrow Point	142	47	27	22	54%:	25/	24/	22/
CLSC2:Crystal	148	48	27	24	51%:	27/	27/	25/
TPIC2:Taylor Park	23	7.8	4.0	4.1	56%:	4.4/	3.8/	3.5/
VCRC2:Vallecito	38	11.2	5.4	4.1	23%:	5/	4/	4/
NVRN5:Navajo	65	3.3	-14.99	-8.32	-99%:	12/	18/	17/
LEMC2:Lemon	7.8	2.3	1.38	0.69	17%:	0.8/	0.7/	0.5/
MPHC2:McPhee	18.4	8.9	7.9	8.1	71%:	3.0/	3.0/	2.8/
RBSC2:Ridgway	19.1	10.4	3.8	3.2	33%:	4.0/	3.8/	3.3/
YDLC2:Deerlodge	319	28	4.4	7.7	39%:	15/	25/	22/
DRGC2:Durango	90	28	14.2	9.9	32%:	11.0/	11.0/	10.0/